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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,587	09/28/2001	Toru Yoshida	214589US0	2407

22850 7590 03/15/2004

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EXAMINER
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PASTERCZYK, JAMES W

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/964,587

Applicant(s)

YOSHIDA ET AL.

Examiner

J. Pasterczyk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001 and 01 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, drawn to a catalyst, classified in class 502, subclass various depending on the combination of additives to the transition metal compound.
- II. Claims 12-14, drawn to a method of making benzene, classified in class 585, subclass 417.

2. The inventions are distinct, each from the other because:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product, such as a supported finely divided metal catalyst.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Thomas Barnes, Esq., on 8/14/02, a provisional election was made with traverse to prosecute the invention of group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the

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currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In l. 3 of each of claims 1-6 the term "organometallic" is used; this implies a metal-carbon bond which is not clearly in evidence. If such a bond is indeed required then at least A or one of the Q ligands must supply that carbon, yet it is not clearly recited; if it is not required then a different term should be used to describe the complex. In l. 12 of each of these claims insert --and-- before "an aryl". In l. 14 of each of these claims the proper term is --state--, not "valence". In the fourth line from the end in each of these claims "an element" is repeated. Also, in each of these claims, both (2) and (3) are recited as being tridentate, yet the combination of  $L^1$ ,  $L^2$ ,  $R^1$  and  $R^2$  does not necessarily add up to three groups on the ligand that are capable of binding, either covalently or datively, to M in formula (1); the proviso does not remedy this problem. It is also not clear how the L groups could possibly bind to M if they are halogens, giving rise to the question of just what the three Lewis basic groups on A would then be, and if any of the L groups is from group 14 then A must have a charge unless there are three other anionic groups on the L atom, which then would not permit any dative bonding to M. These apparent inconsistencies should be addressed.

In claim 3, regarding the formula (4), it is not affirmatively stated that  $p+q$  necessarily adds up to the valence of E, which appears to be a necessary condition, in the second line after

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the formula appears the upper case P should be lower case to be consistent with the coefficients in the formula, and the mathematical way to express the range of the sum is  $1 \leq p+q \leq 3$ . These problems are also found in claims 4 and 6.

In claim 9, l. 2, after "claims 1 to 6," insert "--wherein--". In the formulas, if q were 2 formula (5) would be a dimer, which is unlikely to exist, and in (6) if q were 2 there would be an Al-Al bond, also unlikely to exist.

In claim 10, l. 2, insert "--wherein--" after "claim 2 or 3". Make l. 6 read in part "--and h denotes an integer--"; in the following line delete "X is a natural number" since it is clear X is a chemical group, and change "valence" to "--state--".

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu, USP 5,550,305 (hereafter referred to as Wu I).

Wu I discloses the invention as claimed (abstract; col. 2, l. 1-10, l. 53-68; col. 3, l. 4-5; col. 4, l. 15-17).

9. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu, USP 5,811,618 (hereafter referred to as Wu II).

Wu II discloses the invention as claimed (col. 3, l. 26-29, l. 43-52; col. 4, l. 45-47).

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10. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Wilson Jr. et al., USP 6,369,253 (hereafter referred to as Wilson).

Wilson discloses the invention as claimed when the coordination geometry around the metal atom is considered to be a trigonal bipyramid with one of the faces being coordinated by the tridentate ligand (last structure of each of figures 1 and 2; col. 8, l. 9-68; col. 17, l. 45 to col. 18, l. 4).

11. Claims 1 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Hlatky, USP 6,180,552 (hereafter referred to as Hlatky).

Hlatky teaches the invention as claimed (col. 2, l. 38 to col. 3, l. 40; col. 4, l. 54-61; examples 5-12).

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 4-9 and 11 are rejected under 35 U.S.C. 103(a) as being obvious over any of Wu I, Wu II, Hlatky or Wilson as cited above in view of Mimura et al., USP 6,337,297 (hereafter referred to as Mimura).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of

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invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

The disclosures of the primary references have been discussed above.

None of the primary references discloses the addition of a metal alkyl or amine compound to the disclosed compositions.

However, Mimura teaches in its abstract that the presence of such compounds is conventional in the art of catalysts of the same use using transition metal compounds of similar structure and atomic composition.

It would have been obvious to one of ordinary skill in the art to apply the teaching of Mimura to any of the primary references with a reasonable expectation of obtaining a highly-useful catalyst composition with the expected benefit of enhanced activity toward ethylene trimerization.

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14. Claims 2, 3 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Wu I, Wu II, Hlatky or Wilson as cited above in view of Hamura et al., USP 5,753,577 (hereafter referred to as Hamura).

The disclosures of the primary references have been discussed above.

None of the primary references discloses the presence of inorganic halides in the catalyst compositions.

However, Hamura teaches that it is conventional in the art to use such compounds as supports (col. 21, l. 8-12).

It would have been obvious to one of ordinary skill in the art to apply the teaching of Hamura to the disclosures of any of the primary references with a reasonable expectation of obtaining a highly-useful catalyst with the expected benefit of being able to perform reactions using the catalyst in slurry or gas phase processes.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is 571-272-1375. The examiner can normally be reached on M-F from 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at 571-272-1362. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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3/8/04



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